

CANADIAN Contract Record

*A Weekly Journal of Public Works, Tenders,
Advance Information and Municipal Progress*

This Paper Reaches Every Week the Town and City Clerks, Town and City Engineers, County Clerks and County Engineers, Purchasers of Municipal Debentures and Leading Contractors in All Lines Throughout Canada

VOL. 15.

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THE CANADIAN CONTRACT RECORD

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VITRIFIED BRICK AND BRICK PAVEMENT

Bids will be received by the undersigned up to 5 O'CLOCK on THURSDAY, 22ND DECEMBER.

(a). For supplying vitrified repressed brick for a pavement on King Street from Wellington Street to Ridout Street, about 13,000 yards.

(b). For supplying, laying and constructing on a 5' concrete base a vitrified brick pavement on said King Street from Wellington Street to Ridout Street.

(c). For laying and constructing with 5 inch concrete base the said pavement, Corporation of London to supply the brick.

Plans, specifications and form of tender at this office,
A. O. GRAYDON,
City Engineer,
London, Canada.

TENDERS

Tenders addressed to the undersigned will be received until noon THURSDAY, THE 22ND DECEMBER, 1904, for the labor and material required for the proposed West End Trunk Sewer and Watermains in the City of Edmonton—

LABOR—Excavation, Pipelaying and Backfilling on 13,200 lin. ft. Sewer and Watermains.
Building Manholes, Valve Chambers and Catchbasins.
Setting Hydrants.

MATERIAL—Cast Iron Pipe and Specials, 4 inch to 12 inch diameter.
Hydrants, 8 ft. Trench, 2 way and steamer Gate Valves, 4 inch to 12 inch.
Brass Goods, Service Boxes, Galvanized and Lead Pipe.
Vitrified Pipe from 6 inch to 24 inch diameter with bends and junctions.

Prices for material to be F. O. B. Edmonton in carload lots, delivered in city yard not later than April 1st, 1905.

Plans and specifications may be seen and forms of tender and other information obtained at the office of the undersigned. The lowest or any tender not necessarily accepted.

A. J. McLEAN,
City Engineer.

DEBENTURES FOR SALE

Tenders are invited by the undersigned until DECEMBER 31ST NEXT, for the purchase of fifteen thousand dollars worth of water works debentures of the Town of Red Deer, N.W.T.

I. C. FULMER,
Secretary-Treasurer.

CONTRACTS OPEN

FERGUS, ONT.—John Keleher purposes building a residence next spring.

OKOTOKS, N.W.T.—It is stated that Wilson Bros. will erect a large warehouse here.

DESCHENES, QUE.—Scott & O'Connor are preparing to build a flour mill here.

GLACE BAY, N. S.—The Council have decided to borrow \$6,000 for street improvements.

GALT, ONT.—Alexander Buchanan, Spruce street, has offered to donate a site for a new Y.M.C.A. building.

FORT FRANCES, ONT.—The Enger-Nord Realty Co. will build a hotel here to cost about \$25,000.

NIAGARA FALLS SOUTH, ONT.—A brick residence will be built on Ross street by Herman Misener.

WOODSTOCK, N.B.—George W. Upham has decided to rebuild his saw mill burned last week.

CORNWALL, ONT.—It is proposed to raise \$5,000 for the extension of the waterworks system.

THOROLD, ONT.—A vote will be taken in January on the question of constructing a waterworks system.

LETHBRIDGE, N.W.T.—The ratepayers have approved of a by-law to raise \$11,000 for public school purposes.

RAINY RIVER, ONT.—Tenders have just been taken by T. P. Morton, Town Clerk, for erection of a fire hall.

CHATHAM, N.B.—The Town Council have appointed a committee to report upon a site for a new market building.

BERLIN, ONT.—The ratepayers will vote on a by-law January 2 to raise \$65,000 for a new sewerage disposal system.

OWEN SOUND, ONT.—The members of the Presbyterian church in Brooke contemplate building a new church next summer.

NANAIMO, B. C.—Henry Reifel, manager of the Union Brewery Co., purposes establishing a \$10,000 malting plant here.

VICTORIA, B.C.—The Council have decided to take steps at once to build a new home for old men, at a cost of about \$12,000.

RIDGETOWN, ONT.—John E. Middleditch is about to build a machine shop, to be two stories, 60 x 30 feet, stone and brick.

BRANTFORD, ONT.—The Board of Water Commissioners will ask the ratepayers to provide \$50,000 for proposed improvements.

COBDEN, ONT.—The congregation of which Rev. Mr. Robinson is pastor have had plans prepared for a new church, to cost about \$10,000.

NORTH SYDNEY, N. S.—The extension of the Intercolonial Railway to Sydney Mines is said to have been indefinitely postponed.

ALEXANDRIA, ONT.—The Board of School Trustees will either erect an addition to the present boys' school or a new six-room building.

WOLSELEY, N. W. T.—The electors will be asked to approve of by-laws to provide funds for fire protection and for a system of sewerage.

RIMOUSKI, QUE.—Mr. Mignault has prepared plans for waterworks system here, which have been approved by the manager, J. Gallagher.

KINGSTON, ONT.—The Bell Telephone Company purpose erecting an office building on Clarence street. They will also install metallic lines.

KINCARDINE, ONT.—A by-law to raise \$8,500 for extending and improving the High School buildings will be voted on by the electors January 2.

SYDNEY, N.S.—It is the intention of Chappell Bros. & Company to erect a large brick or cement office and warehouse building, of fireproof construction.

BROCKVILLE, ONT.—D. F. Burrell & Co., manufacturers of dairy supplies, Little Falls, N. Y., have asked the Council for a site in this town for a factory.

VERNON, B. C.—A petition is in circulation asking the Council to borrow \$40,000 to install a water power plant in connection with the electric light system.

TILSONBURG, ONT.—The ratepayers will be asked to approve of a by-law to give a loan of \$20,000 for the establishment of an engine and wind mill factory here.

PORT HOPE, ONT.—The Presbyterian congregation have decided to procure plans at once for a new church to replace the First Presbyterian church, Rev. H. E. Abraham is pastor.

HUNTSVILLE, ONT.—Tenders for erection of a brick school house in S. S. No. 6, Brunel Township, are invited up the 20th inst. Plans at office of L. H. Ward, this town.

WOODSTOCK, ONT.—A by-law

will be submitted to the ratepayers in January to grant a loan of \$12,000 to the Eureka Planter Co., of Windsor, to establish a plant here.

SEAFORTH, ONT.—A by-law to loan \$20,000 to the Canada Furniture Manufacturers to assist them in extending their factory will be submitted to the ratepayers January 2.

BAYSVILLE, ONT.—W. H. Brown will receive bids up to Tuesday, 20th inst., for the purchase of \$2,000 4½ per cent. debentures issued by the municipality of McLean and Ridout.

NEWCASTLE, N. B.—Willis Chipman, C. E., of Toronto, has recommended the installation of another pumping engine for the waterworks plant. The reservoir may also be extended.

ST. BONIFACE, MAN.—Mr. Marchand, architect, of Montreal, is preparing plans for a new cathedral to be built here, to cost around \$150,000. Work will be started early next summer.

OWEN SOUND, ONT.—The ratepayers of Grey Township will vote on a by-law on January 2nd to raise \$30,000 for the erection of steel bridges, the debentures to run for twenty years.

NEW WESTMINSTER, B.C.—Mr. Garfield, of Vancouver, and Mr. Kerr, of this city, have purchased the Edison-Grand Theatre on Columbia street and will make important alterations and improvements.

HALIFAX, N. S.—The property on Upper Water street which was occupied by Black Bros. and George C. Cook, commission merchants, has just passed into the hands of the latter, who intends to completely remodel the building.

FREDERICTON, N.B.—Tenders for building Munro bridge, Nashwaak, will be received by the Department of Public Works up to December 27.—City Engineer Jack will submit a report to the Common Council on the water supply.

LINDSAY, ONT.—Robert Spurr Weston, waterworks expert, of Boston, has reported in favor of installing the English system of slow filtration and a by-law to provide \$20,000 for that purpose will likely be submitted to the electors.

NIAGARA FALLS, ONT.—The City Council have passed a by-law to issue \$14,000 of debentures for sewers.—It is persistently rumored that the Ontario Power Co. will proceed at once to greatly increase their power development plant.

PETROLEA, ONT.—Wm. C. Noxon, James W. McCutcheon, and others, have asked for a franchise to supply gas throughout the town, and a by-law exempting their proposed plant and equipment from taxation will go before the electors in January.

CHATHAM, ONT.—The City Council have accepted the plans of T. J. Rutley & Son, architects, for a new market building, and a by-law will be submitted to the ratepayers on January 2.—C. R. Bowers, Delaware ave., is having plans prepared for six new houses.

RENFREW, ONT.—The members of the Board of Trade are interesting themselves in securing the erection of a first-class hotel here.—A by-law to raise \$5,000 for extending and improving the sewerage system will be submitted to the ratepayers on January 2.

HAWKESBURY, ONT.—Tenders are invited by the Department of Public Works, Ottawa, up to Friday, 23rd inst., for the erection of a post office building here. Plans on application to the Postmaster and at the Department of Public Works, Ottawa.

BRANDON, MAN.—The Bank of Commerce have secured an option on

the northwest corner of Rosser ave. and Tent street with the object of erecting a banking building thereon.—The City Council have adopted a proposal to install an efficient fire alarm system.

ST. CATHARINES, ONT.—L. K. Jones, Secretary Department Railways and Canals, Ottawa, will receive tenders up to 15th inst. for the removal of the centre pier work of Mailtts and A'laburg bridges at the Welland canal. Plans at the office of the Superintending Engineer here.

OTTAWA, ONT.—W. J. Y. Campbell & Son have purchased a site on Richmond road on which they will erect an office and factory building.—L. K. Jones, Secretary Department of Railways and Canals, will receive tenders up to Tuesday, 20th inst., for rebuilding slope wall at the Lachine canal.

FORT WILLIAM, ONT.—By-laws will be submitted to the ratepayers on January 2 to provide the following sums: \$5,000 for fire protection, including \$2,800 for a hook and ladder; \$6,000 for improvement and extension of the electric light plant, including \$500 for transformers; \$22,500 for improvement and extension of the telephone system.

MONCTON, N.B.—Phillip N. Hamm, of St. John, has purchased a site at the corner of Main and Pleasant streets and will commence the erection of a biscuit factory early next spring.—The Provincial Government are making temporary repairs to Hall's Creek bridge, but next summer it is intended to erect a new steel structure.

PENETANGUISHENE, ONT.—The Breithaupt Leather Co. have submitted a proposition to the Town Council to make extensions and improvements to their tannery.—George C. Taylor, of Toronto, is forming a company for the purpose of establishing a woodware factory in this town and has asked the Council for a fixed assessment.

ST. MARYS, ONT.—The St. Marys Quarries, Limited, has been organized, with a capital of \$200,000, to acquire all the stone quarries in this vicinity. The company purpose developing the quarries on a large scale, and the C. P. R. will be asked to build a branch line to this town. The directors include A. Douglas and T. T. Garner.

VANCOUVER, B. C.—The Dominion Government have issued instructions for the establishment of two large fish hatcheries on the northern coast.—The Mundy Lumber Co., of Bradford, Pa., have decided to build a saw mill at Three Valley Lake, near Revelstoke, to cost upwards of \$50,000. Construction is to be proceeded with immediately.—It is likely that a new Normal school building will be erected in this city next spring.

QUEBEC, QUE.—Coates, Son & Co. have been authorized by the Quebec and Lake St. John Railway to receive subscriptions for £75,000 4 per cent. bonds. The proceeds of the issue will be applied to capital purposes only, the primary objects being the construction of a branch line of about 40 miles in length to the water power on the St. Maurice river at La Tuque. The Dominion Government has voted a subsidy of \$3,200 per mile towards the cost of constructing the proposed line.

ST. JOHN, N.B.—F. N. Brodie, architect, has prepared plans and taken tenders for the erection of a new building adjoining the Telegraph Publishing Co.'s premises on Canterbury street.—H. E. Cook, of Boston, has purchased the charter secured by the New Brunswick Gas & Power Co. and purposes carrying on operations in different parts of the Province.—The City Engineer has been instructed to report on the power avail-

able on the Mispic and Little rivers with the object of assisting the Council in deciding what it is best to do with the pulp mill recently purchased.

PETERBORO, ONT.—It has been definitely decided to submit a by-law to the ratepayers in January to raise \$20,000 for waterworks extension and improvements.—It is also proposed to submit a by-law to borrow \$12,000 for the purpose of reconstructing and repairing bridges in the town.—The building which the Peterboro Shovel Tool Co. propose to erect will be 200 x 65 feet and will be used for the manufacture of shovels, other buildings to be added later for the manufacture of handles.—The Peterboro Radial Railway Co. are considering the extension of the electric railway to Lakefield next year.

HAMILTON, ONT.—The Trustees of Barton street Methodist church, of which Rev. H. G. Livingstone is pastor, are considering the building of a larger edifice.—The following building permits were granted last week: F. J. Rastrick, church on Main street for the Unitarian congregation, cost \$3,000; Geadon & Disher, four houses on Gibson ave., between Cannon and Barton street, cost \$4,800; Cahill & Harris, five brick houses, Alanson street, cost \$8,000; F. J. Lyne, house on Wentworth street, between Cannon and Barton streets, cost \$1,600.

LONDON, ONT.—The County Council have instructed the Bridge Commissioners to procure plans and call for tenders for a bridge to be built over the Sauble river, on the town line between McGillivray and West Williams, the tenders to be opened at the January sessions.—A. E. Welch, manager of the Southwestern Traction Co., states that it is intended to begin the proposed line to Ingersoll in the early spring.—A. O. Graydon, City Engineer, is asking for tenders by Thursday, 22nd inst., for construction of a brick pavement on King street, from Wellington to Richmond street, and from Richmond street to Ridout street.—Commissioner Pocock has introduced a motion that immediate action be taken to extend and improve the waterworks system by laying an 18-inch main from the pumping station to Egerton street.—The McClary Manufacturing Co. have decided to erect their storage warehouse on Trafalgar street of brick instead of frame.

MONTREAL, QUE.—Henry Birks & Sons will extend their premises on St. Catherine street and Phillips square so as to include the whole block. The addition will be 200 x 90 feet, and will be constructed of Miramichi sandstone. Building operations will be commenced either next spring or a year later.—The Robert Simpson Co., of Toronto, are reported to have secured an option on a site on St. Catharine street for the purpose of establishing a departmental store in this city.—The Protestant School Commissioners will spend about \$150,000 for additional accommodation. Additions will be made to the Aberdeen, Dufferin, Mount Royal and Lansdowne schools. The question of building a senior school near the corner of Bleury and Sherbrooke streets is also under consideration.—Mr. James Ross has given \$25,000 towards the proposed Alexandria hospital, which will permit building operations to be undertaken at once. The architects are E. & W. S. Maxwell and the building is estimated to cost about \$200,000.—The Wm. Davies Co., of Toronto, have obtained from the Union Stock Yards Co. a site covering about three acres in this city on which they will erect a large packing house.

WINNIPEG, MAN.—Thomas Ryan & Co., wholesale boot and shoe mer-

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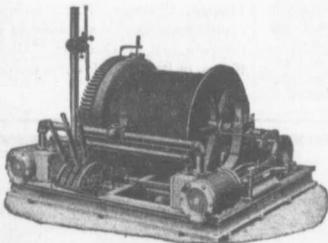
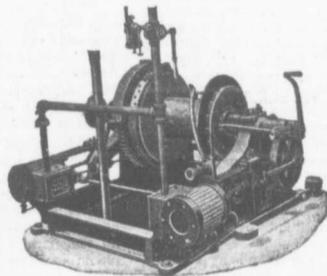
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chants, contemplate the erection of a large warehouse next spring, having secured a site on Princess street.—Application will be made at the coming session of the Legislature for the incorporation of a company, organized by Winnipeg and Minnesota parties, to build pulp and saw mills on the Winnipeg river, east of Fort Alexander. Later it is proposed to establish an electric power transmission plant.—The Bell Telephone Co. will construct about 200 miles of line in this province next year. The main line west will be extended to Virden.—The Fire, Water and Light Committee have decided to at once take steps towards securing a system of high pressure waterworks. The system proposed by the City Engineer involves an expenditure of \$69,177, of which \$56,112 is for distribution pipes and \$13,000 for valves and hydrants.—The proposal to have a new traffic bridge built over the Red river so as to provide convenient access to the north end of the city is taking definite shape. It has been decided to ask the Government to give \$10,000, the balance of the cost to be borne by the different municipalities. A suitable bridge will cost about \$75,000.—The Legislature have passed an Act providing for the erection of a new jail for the Eastern Judicial District and empowering the issue of \$200,000 of debentures for the purpose.

TORONTO, ONT. — J. P. Hynes, architect, is this week taking tenders for excavation for the new Wheatstear Hotel to be built at 669-71 King street west. — Thomas Urquhart, Chairman Board of Control, will receive tenders up to Tuesday, 20th inst., for general supplies and lead pipe required by the city during the year ending December 31st, 1905. — It is announced that the Pintech Compressing Co. will establish a gas manufacturing plant in Toronto next year. — The Board of Governors of the Western Hospital purpose erecting immediately an addition to the east of the old building, to be three stories, 35 x 50 feet, brick with slate roof. They have also in prospect the erection of a larger building on a newly acquired site to the north of the main building. — It is understood that the tenders received for the proposed breakwater extension on the south side of the Island were much in excess of the estimate and that the Government will advertise for new tenders. — An option has been obtained on several different properties on which to erect the proposed library building and the Council will deal

with the matter at an early date.—It is reported that the Hebrew residents of the city have purchased a site at the corner of Elm and University streets on which to build a new synagogue.—A sufficiently signed petition has been received by the City Engineer for an asphalt block pavement on Bloor street, from Yonge street to Avenue road.—The project for building a new art gallery and museum is likely to take definite shape in the near future. Byron E. Walker, Frederic Nicholls and E. B. Osler are interested.

FIRES.

Public school building at Port Carling, Ont., loss \$3,000.—Saw mill of George Upham at Nackawick Siding, N.B.; loss \$6,000, insurance \$3,000.

CONTRACTS AWARDED.

HALIFAX, N.S.—Reconstruction of Black Bros. building: John Lane, contractor.

LONDON, ONT. — The County Council have accepted the tender of Lewis & Co., of Chicago, for purchase of \$33,000 of debentures.

FREDERICTON, N.B. — Contract for the Lousion River bridge, Great Load, has been awarded to Mr. Gaulet, of Charlo Station. Bridge will be 600 feet long.

ATHENS, ONT.—The contract for heating and ventilating the new town hall here has been let to the James Smart Manufacturing Co., of Brockville, Ont.

HAMILTON, ONT.—The Canadian Oils Elevator Co., of this city, have been awarded the contract for supplying freight and passenger elevators for A. Ansley & Co., Jessop & Sons, John Fiske, and the Robert Simpson Co., Toronto; Rathban Co.; Deseronto; Gunn, Langlois & Co., Montreal; Woodstock General Hospital, Woodstock, and Smallman & Ingraham, London.

TORONTO, ONT.—The Board of Control last week accepted the following tenders for supplies for the Works Department: Sand, per cubic yard, 80 cents; to the Sand & Dredging Co.; lumber, plank, board measure, per thousand feet, \$18.69, boards \$18.96, to Reid & Co.; cedar posts, 18½ cents each, to Reid & Co.; unscreened gravel, 80 cents per cubic yard, to the Sand and Dredging Co.; hydrants, 3-way \$45, 2-way \$55, to Canada Foundry Co.; special castings, per 100 pounds, \$2.50, to T. Tomlinson &

Son; lumber, one to six inches thick, per thousand feet, pine \$22.79, hemlock \$15.79, hemlock timbers 12 x 12, 12 and 16 feet long, \$16, to Reid & Co.; pine timbers, 12x12, 12 and 16 feet long, \$21, 20 feet long \$22, \$24 feet long \$24, hemlock timbers, 12x12, 20 feet long \$19, 24 feet long, \$21, all to Arthur Bryce. Tenders for paving bricks, stone, sewer pipe, cement, valves, castings, etc., were referred to the City Engineer for a report.

NEW COMPANIES.

England Lumber Company, Limited, incorporated, capital \$36,000, to acquire timber limits, build and operate saw mills, etc. Promoters, Robert A. England, of Saint Mathias of Cabano, Que.; S. C. Riou, of Fraserville, Que.; James Crawford, of Van Buren, Maine; George C. Cutler, lumberman, of Boston, and others.

Kings' Asbestos Mines, incorporated, capital \$300,000, to acquire and develop mining lands, timber limits and water powers in the province of Quebec. Promoters, H. M. Whitney, of Boston; Edward Slade, of Quebec; Benson Bennett, of Thetford Mines, Que., and others.

Campbell Lumber Company, Limited, Weymouth, N.S., incorporated, capital \$75,000, to carry on lumbering operations. Promoters, G. A. Kohl, W. P. Sharp, R. C. McMichel, and others, of Montreal.

United Lumber Company, Limited, incorporated, capital \$250,000, to acquire the business of the Three Rivers Planing Mills, Three Rivers, Que. Promoters, George A. Forbes, Peter Richardson, and others, of Montreal.

Richibucto-Rexton Telephone Company Limited, Richibucto, N.B., incorporated, capital \$20,000, to construct telephone systems. A. B. Carson, of Rexton, Richard O'Leary, of Richibucto, and others.

Miramichi Pulp & Paper Company, Limited, Chatham, N.B., incorporated, capital \$300,000, to acquire and operate the pulp mill at Chatham. George T. Keyes, of Peperell, Mass., is the principal owner.

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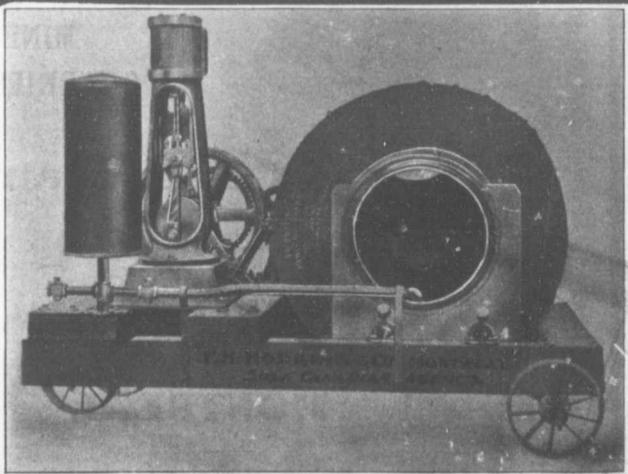
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E.

GRAINING WALNUT.

Mr. M. C. Hillick gives the following suggestions for the proper imitation of walnut when distemper graining.

The graining color should consist of Vandyke brown, three parts; Indian red, one part. Wet the ingredients up in stale beer. The ground colors should be mixed to dry flat, and thinned with turpentine sufficiently to be applied with a camel's-hair brush.

To grain walnut, saturate a soft sponge with the distemper color, then squeeze out the excess of color, and wipe the surface over very quickly. Then beat out the color with a mottler, striking the brush softly upon the surface, and aim to bring out all the peculiar undergrain and tracings incident to this beautiful wood.

Next glaze with a mixture of raw linseed oil, pale drying japan and turpentine. This should be applied with a camel's-hair brush, and is used to set and hold the color in place. Now take the Vandyke brown alone, and having wet it up in the stale beer to the proper consistency, sat-

urate a clean soft sponge with the color and wipe over the surface. Once the color is wiped solidly over the surface, draw a piece over the thumb or finger and proceed to wipe out the lights. Then with a piece of hickory, shaved thin, 1 in. by 4 in., and technically known as a "blaze stick," run the stick out the full length of the panel. Now with a blender—a brush especially made for the purpose—blend in the color or wipe it out as it is found necessary to develop the splendid lines and graceful curves natural to the mature walnut. Seek to blend out the prominent grain of the wood in a way to bring forth the brilliant black tracery and soft warm shades of brown, always a part of a walnut panel.

It will be understood that these various operations must necessarily be completed very quickly, and if the work should prove unsatisfactory, you have only to wet up the color and try over again. This feature is one all-important advantage in favor of the distemper graining, and en-

ables the beginner to try and try, until he becomes familiar with the various operations and succeeds in making them at least fairly successful.

After the work with the blender has been concluded, rub the surface over gently with the palm of the hand, applying a light, uniform pressure which serves to tone down and soften the texture of the graining.

The assets of C. Scalan, plumber, Montreal, have been sold.

The Dominion Sand Co. has been formed at St. David's, Ont., and has acquired the sand pit of H. Wilcox at that place.

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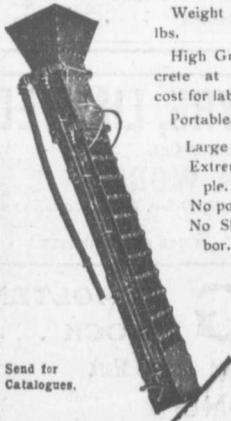
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The third edition of the Canadian Contractor's Hand-Book is now on sale. The book has been revised and enlarged to upwards of two hundred pages, and the title changed to the Canadian Contractor's Hand-Book and Estimator, considerable matter bearing on the cost of performing various kinds of work having been added.

The price of the third edition, mailed free, is \$1.00 to subscribers of THE CANADIAN ARCHITECT AND BUILDER, \$1.50 to non-subscribers. Order from the publishers,

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Cement has become one of the most important materials used in modern construction, and its use insures an absolute hardness and strength that will not deteriorate, provided the necessary care is taken in its manufacture, care and deposition which long and varied experience has proved to be indispensably requisite.

By its judicious application, many works may now be erected which by reason of the great cost of other material attending their erection could not be constructed. This is especially true of submerged or partly submerged structures.

The monuments of Egypt present one of the oldest examples of the use of lime in construction. The mortar which joins the stone of the Pyramid of Cheops is precisely similar to modern mortars made of sand and lime. In limiting the use of mortar to filling narrow joints, separating immense blocks, thereby reducing almost to insignificance the part which it had to play, the Egyptians seemed to forestall the influences of a dry and burning climate. Time has justified their prudence in this, for the works erected on the banks of the Nile by the Romans, made of small materials and presenting many joints, have left but faint traces, while some Egyptian temples still present themselves as monuments against the onslaughts of time.

The knowledge of the properties of lime descended from Egypt to Greece, where the exigencies of the climate and the ingenuity of the people brought forth many of its uses, unknown to Egypt. Subsequently Greek colonies imported and popularized their processes in Italy.

According to Vitruvius, a Roman architect, the Romans made use of the lime, sand and materials of the countries where they built. He also affirms that they considered the best lime to be produced from hard and pure marble—i. e., the fattest lime known; that in Italy they mixed it with pozzolana when used for hydraulic purposes, and that out of Italy they replaced the pozzolana from Vesuvius by powdered brick or tile.

In the Middle Ages a volcanic conglomerate from the banks of the Rhine, named traass, was substituted for the pozzolana of Italy, and mortar was made of fat lime, mixed with traass, to render it hydraulic. Many castles erected at that time stand well today; the well known castle of the Bastille, erected in 1369-83, which after withstanding a siege, required, in 1789, the use of powder for its destruction, being extremely solid even in the interior walls.

At what period were first used certain limestones, having the property of producing a lime which will harden under water, is not precisely known. The first use of cement stone is also equally obscure. In 1795 Messrs. Parker and Wyatts began to manufacture from egg-shaped limestones found near London a product known as Roman cement, which was soon received with great favor throughout Europe; but neither the producers nor the consumers offered any explanation of its merits.

In 1818 the true explanation of the hydraulic properties of limes and cements was given by Vicat in the publication of his discoveries on this subject. The dis-

coveries of Vicat attained their immediate object, for in the short time artificial hydraulic lime of excellent quality was manufactured on a large scale under his direction, and a few years later he indicated as many as 400 quarries in France where hydraulic limestones were to be found.

From the time of Vicat many new discoveries have been made in cement, both in its composition and in the many practical uses in which it is employed.

From the time when the ancient Egyptians used their crude cement, which nevertheless has proved indestructible in the many ages which have passed, to the present, is a long stretch of time; but nevertheless the world is just beginning to discover the value of cement, and the many uses to which it may be put, and what a factor of economy it assumes in the gigantic construction of the present day. It is no longer used only to cement crevices, or as in later day for foundations; now foundation, superstructure, roof, crevice and plaster form mediums for its use.

With the discovery of the cement block machine for the manufacture of artificial stone, a new impetus has been given to the life of cement, and now buildings rivaling in strength and beauty with pure marble are made from it at a wonderfully small proportion of the cost of the stone it imitates, and which stone in many respects is greatly its inferior. Subways, harbor, improvements, bridges, sea walls, light-houses, municipal sewerage improvements, tunnels, canal locks, large depots and hotels, are made entirely of this valuable product.

The age of stone has indeed found a rival worthy of its steel, and a new age is being born—the age of cement. Cement has every quality to recommend it. The small cost of its manufacture and the convenience with which it can be handled, its wonderful powers of endurance and durability, give it a preference in construction which it is hard to imagine will ever be replaced by any other material.—Kansas City Architect and Builder.

The brickyard of the London Builders' Supply Co., London, Ont., was sold last week to Wm. Tytler for \$9,000.

FIREPROOFING WOOD.

Increased attention is being given to the problem of rendering wood and other easily inflammable substances fireproof. From reports in the German press it would seem that the process of a Mr. Gautsch, of Munich, is very successful. The timber to be treated is placed in a vacuum, produced by pumping out the air. The cells are thereby freed from air and the wood is then impregnated under pressure with a solution of sulphate of ammonia and borax ammonia. The color, texture or density of the wood is not affected thereby.

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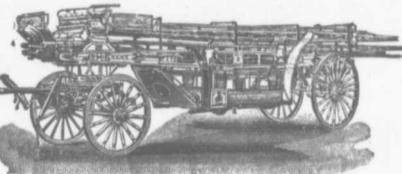
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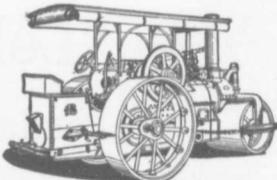
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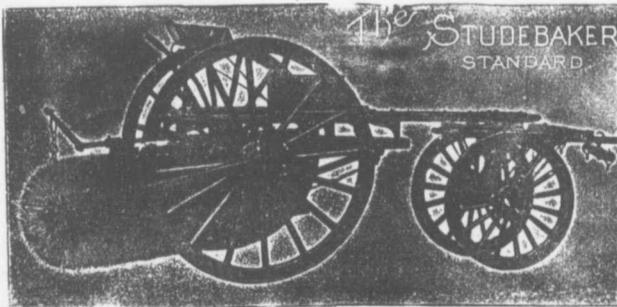
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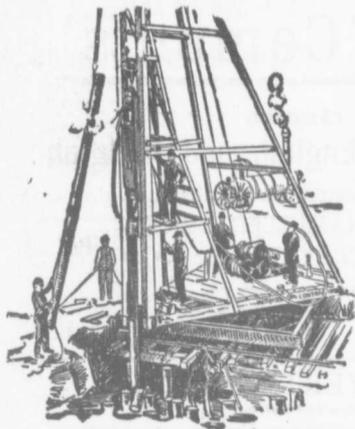
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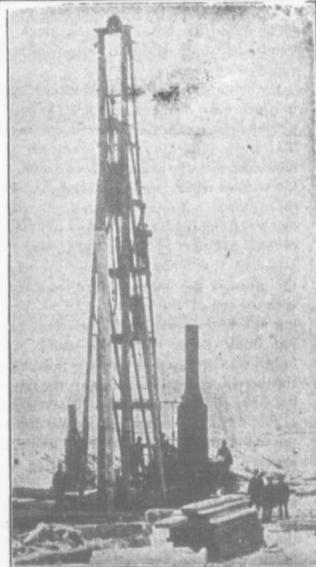
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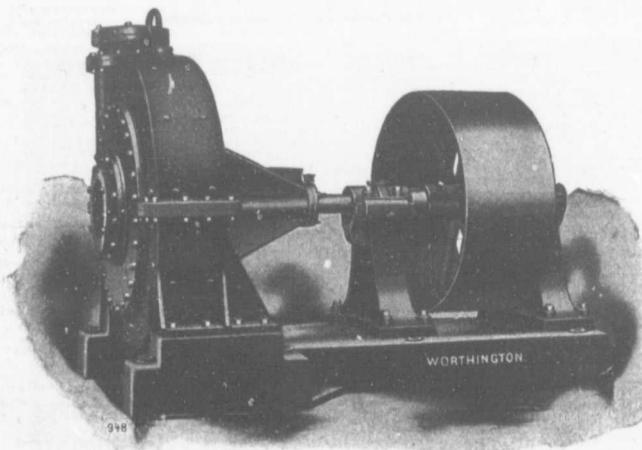
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Scaffolding was erected inside the stack, to which were clamped two upright posts, perpendicular with the sides of the stack. To these uprights were clamped, by means of bolts, a lookout cross beam, to the ends of which were attached pulleys, through which a rope operated, the rope being fastened at each end to a tub made of half a barrel. These tubs were so attached that when one was lowered to the ground the other rested on a level with the top of the stack. The tub resting at the top of the stack when filled with the brick taken from the stack was lowered to the ground, gravity furnishing the motive power, the man at the top of the stack acting as a brake. The descent of the filled tub raised the empty one to the top of the stack, when that would be lowered, and the former one, which has been emptied by the man below, would simultaneously ascend. After a number of tubs had carried their burden to the bottom of the stack, the lookout cross beam would be lowered and the ropes shortened. This simple method was continued until the top of the stack projected but a few feet above the level of the ground, when the tubs were no longer necessary.

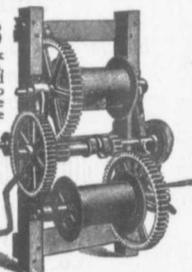
Ordinarily a stack of this height is razed to the ground by means of dynamite, but in this case the presence of valuable machinery located all about the vicinity of the stack made such a method impracticable. —Kansas City Architect.

Mr. Cecil B. Smith has completed his work as chief of construction for the Canadian Niagara Power Co. and has returned to Toronto. He will resume practice as a consulting engineer, and has opened offices at Rooms 24 and 25, No. 36 Toronto St., as per his card in this paper.

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TO LIMIT THE PERSONAL EQUATION IN CEMENT TESTS.*

At the convention of the society held two years ago, the writer outlined in a general way the work inaugurated at the cement testing laboratory of the NewYork Rapid Transit Railroad Commissioners. In mentioning the efforts to minimize as far as possible the baneful influence of the "personal equation" of the tester, reference was made to some special experiments just then commenced which it was hoped would lead up to some interesting results. It is the data collated from these experiments which have now crystallized into a regular part of the work, although so far only for comparison, which are the subject of the present paper. For two years the laboratory has been regularly making up every tenth lot of cement submitted for use on the work, under what the writer calls the "dry" process of briquette making, in addition to the usual method practiced in laboratories generally. After much experimenting and numberless trials, the method now rigidly followed was adopted.

The gang moulds are filled with dry cement in three layers, the lower two being tamped by three blows of a wooden mallet and a tamping iron exactly fitting the moulds, the top layer being simply put into place, pressed in and smoothed off with a small trowel, after the moulds had been filled. Three blows of the mallet were adopted because repeated experiments demonstrated that this number gave results, when the briquettes were broken, approximating the strength desired in what was considered the most acceptable cement at the 7-day period; fewer blows not giving such satisfactory results in every way, more blows developing abnormal strength at that period as well as at later stages.

After the briquettes are finished, as far as filling the moulds is concerned, the whole is put into storage tanks and there left to take up as much water as required. At the expiration of 24 hours, all the briquettes are ready to be taken from the moulds, when those for the first period are immediately broken and the others stored in tanks. By careful weighing of a great many sets of briquettes it has been ascertained that 22 per cent. of water by weight is taken up during the first immersion. This is just 1 per cent. more than is generally used in ordinary practice in this laboratory, though therein when tempering the aim is to obtain the same paste constituency always, irrespective of the percentage of gauge water. While this does occasionally vary from 20½ to 22 per cent. working as the writer does with the output of one company's mills, this variation occurs so seldom that it may be ignored in calling the average gauge water 21 per cent.

The variation in weight of individual briquettes (the average results always being obtained from ten breaks) as well as the variation in tensile strength of these ten briquettes is markedly less than with the ordinary briquettes. The pronounced feature of the Rapid Transit specifications, viz.: the percentage of gain in strength

between 7 days and 28 days, which requirement to a greater or less extent is finding its way into other specifications, is readily met in practically every instance under this "dry" method of manipulation, and while this is not applicable to sand mortar tests and does not approximate actual field conditions, even to the extent of briquettes ordinarily made, still as cement is not practically used neat and laboratory results are only for comparison at best, any method giving such regular results should claim attention.

Here follow some comparative results, the figures given for each period being averages of 300 briquettes representing over 50,000 barrels of cement, irrespective of its acceptance or rejection.

Ordinary Wet Briquettes—

7 days, 711 pounds.
28 days, 791 pounds.
3 months, 779 pounds.
6 months, 774 pounds.
1 year, 821 pounds.
Gain, 11.1 per cent. 7 days to 28 days.

Dry Method Briquettes—

7 days, 739 pounds.
28 days, 888 pounds.
3 months, 903 pounds.
6 months, 863 pounds.
1 year, 871 pounds.
Gain, 20.1 per cent. 7 days to 28 days.

Of the lots of above total, which were accepted as approximating the gain requirement, the marked showing was as follows:

Ordinary Wet Briquettes—

7 days, 705 pounds.

28 days, 797 pounds.
3 months, 788 pounds.
6 months, 779 pounds.
1 year, 863 pounds.
Gain, 13.0 per cent., 7 days to 28 days.

Dry Method Briquettes—

7 days, 710 pounds.
28 days, 887 pounds.
3 months, 912 pounds.
6 months, 878 pounds.
1 year, 897 pounds.

Gain 24.9 per cent., 7 days to 28 days.
Of the lots of first total rejected for marked failure to comply with the 15 per cent. increase requirement, the results are as follows:

Ordinary Wet Briquettes—

7 days, 764 pounds.
28 days, 809 pounds.
3 months, 785 pounds.
6 months, 804 pounds.
1 year, 695 pounds.
Gain 5.9 per cent., 7 days to 28 days.

Dry Method Briquettes—

7 days, 816 pounds.
28 days, 937 pounds.
3 months, 903 pounds.
6 months, 880 pounds.
1 year, 792 pounds.

Gain 14.3 per cent., 7 days to 28 days.
The last results would have assured the acceptance of all the rejected cement, if the failure to show proper increase had been the only reason for adverse action.

Examination will show that in every instance the "dry" method briquettes show the greater strength at every period, and while the above are averages, the uniformity of results in individual lots, as referred to before, is very marked. In most instances the lowest dry break is as good as the best wet break. These results are very surprising and are incontrovertible evidence that the manipulation of the cement by the tester surely works detrimentally as far as obtaining most regular laboratory results.

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* Abstract of a paper presented to the American Society for Testing Materials, by W. A. Aiken.

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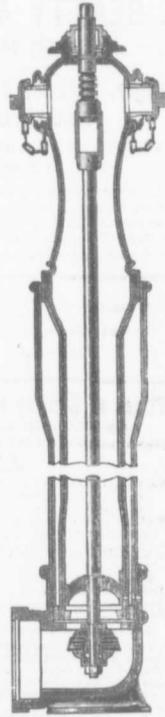
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